



1.

SEQUENCE LISTING

<110> MCLEOD, RIMA W.
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ROBERTS, FIONA
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FERGUSON, DAVID
LYONS, RUSSELL
MUI, ERNEST
MACK, DOUG
SAMUEL, BENJAMIN
GORNICKI, PIOTR
ZUTHER, ELLEN

<120> ANTIMICROBIAL AGENTS, DIAGNOSTIC REAGENTS, AND VACCINES
BASED ON UNIQUE APICOMPLEXAN PARASITE COMPONENTS

<130> 19338-90966

<140> 09/631,594

<141> 2000-08-03

<150> PCT/US00/11478

<151> 2000-04-27

<150> PCT/US97/12497

<151> 1997-07-18

<160> 83

<170> PatentIn Ver. 2.1

<210> 1

<211> 72

<212> PRT

<213> Plasmodium falciparum

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Asp Asp Lys Gly Glu Cys Lys Asn Met Ser Tyr His Ser Thr Ile Gln
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Asn Asn Glu Asp Gln Ile Leu Asn Ser Thr Lys Gly Phe Met Pro Pro
35 40 45

Lys Asn Asp Lys Asn Phe Asn Asn Ile Asp Asp Tyr Asn Val Thr Phe
50 55 60

Asn Asn Asn Glu Glu Lys Leu Leu
65 70

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<211> 45

<212> PRT

<213> Toxoplasma gondii

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 Arg Thr Thr Ser Arg His Glu Glu Glu Val Glu Arg Gly
 35 40 45

<210> 3

<211> 72

<212> PRT

<213> Zea mays

<400> 3

Met Ala Ala Leu Ala Thr Ser Gln Leu Val Ala Thr Arg Ala Gly Leu
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 20 25 30
 Arg Gly Ala Arg Ala Ser Ala Ala Asp Thr Leu Ser Met Arg Thr
 35 40 45
 Ser Ala Arg Ala Ala Pro Arg His Gln Gln Gln Ala Arg Arg Gly Gly
 50 55 60
 Arg Phe Pro Ser Leu Val Cys
 65 70

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<212> DNA

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<220>

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<211> 19

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<223> Description of Artificial Sequence: Primer

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tcgggtctgg ttgatttt

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catgtcgaga agttgttc

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gaacaacttc togacatg

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<210> 17

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<211> 18

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<210> 23
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<211> 21

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<210> 28

<211> 22

<212> DNA

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<400> 28

aaatttttat ctccatactt tg

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<210> 29

<211> 25

<212> DNA

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<223> Description of Artificial Sequence: Primer

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gtattttacc aagattacca ccc

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<210> 31
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<223> Description of Artificial Sequence: Primer

<400> 31
cccccaacac tatgtcg

17

<210> 32
<211> 18
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<223> Description of Artificial Sequence: Primer

<400> 32
cagtgggcaa aataaaga

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<210> 33
<211> 16
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<223> Description of Artificial Sequence: Primer

<400> 33
ccagtgggca aaataa

16

<210> 34
<211> 17
<212> DNA
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<220>

<223> Description of Artificial Sequence: Primer

<400> 34
ggaagagaaa cagccac

17

<210> 35
 <211> 15
 <212> DNA
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<220>
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<400> 35
 tgctgctggg gcgtg

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<210> 36
 <211> 7
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<400> 36
 Lys Lys Cys Gly His Met Leu
 1 5

<210> 37
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<400> 37
 cggttgatg tcggtttcgc t

21

<210> 38
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<400> 38
 tggtgggtga gtacgcaaga gtgg

24

<210> 39
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<223> Description of Artificial Sequence: Primer

<400> 39

cccatcgacg atatgttcga g

21

<210> 40

<211> 22

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<223> Description of Artificial Sequence: Primer

<400> 40

cgtagaacgc cgttgtccat tg

22

<210> 41

<211> 25

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<220>

<223> Description of Artificial Sequence: Primer

<400> 41

ttgccgttct ggaaagctag taaga

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<210> 42

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 42

gcaaacgctg gtcctcaatg t

21

<210> 43

<211> 25

<212> DNA

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<220>

<223> Description of Artificial Sequence: Primer

<400> 43

gtttccagat caccacacagt cttgg

25

<210> 44

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 44

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<212> DNA

<213> Toxoplasma gondii

<220>

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<222> (162)..(1769)

<400> 45

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ccgctcggtc cgtgcatct cctcacattt cttgcagtca g atg tct tcc tat gga 176
                                         Met Ser Ser Tyr Gly
                                         1           5

gcc gct ctg cgc ata cac act ttc ggt gaa tct cac ggc tca gcc gtt 224
Ala Ala Leu Arg Ile His Thr Phe Gly Glu Ser His Gly Ser Ala Val
          10           15           20

ggg tgt ata atc gac ggg ctg cct cct cgc ctc cct ctt tct gtc gaa 272
Gly Cys Ile Ile Asp Gly Leu Pro Pro Arg Leu Pro Leu Ser Val Glu
          25           30           35

gat gtt cag cct caa tta aat cgc aga aga ccc ggc caa ggg cct ctc 320
Asp Val Gln Pro Gln Leu Asn Arg Arg Arg Pro Gly Gln Gly Pro Leu
          40           45           50

tcg acg cag cgg aga gag aaa gat cga gtc aac ata ctc tcc ggt gtt 368
Ser Thr Gln Arg Arg Glu Lys Asp Arg Val Asn Ile Leu Ser Gly Val
          55           60           65

gaa gac gga tat aca ctc ggt act ccc ctg gcg atg ctc gtc tgg aat 416
Glu Asp Gly Tyr Thr Leu Gly Thr Pro Leu Ala Met Leu Val Trp Asn
          70           75           80           85

gaa gac cgg cgg ccc cag gaa tac cac gcc ctc gcg aca gtc ccg cgt 464
Glu Asp Arg Arg Pro Gln Glu Tyr His Ala Leu Ala Thr Val Pro Arg
          90           95          100

cca ggt cac ggg gat ttc acc tac cat gca aag tac cac att cac gcg 512
Pro Gly His Gly Asp Phe Thr Tyr His Ala Lys Tyr His Ile His Ala
          105          110          115

aaa agc ggg ggc ggt cgg agc agc gcg cgg gag act ttg gcg cgc gtc 560
Lys Ser Gly Gly Gly Arg Ser Ser Ala Arg Glu Thr Leu Ala Arg Val
          120          125          130

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gcc gct gga gca gtc gtt gag aag tgg cta ggc atg cac tac ggc acc	608
Ala Ala Gly Ala Val Val Glu Lys Trp Leu Gly Met His Tyr Gly Thr	
135 140 145	
agc ttc aca gct tgg gtc tgt cag gtt ggt gat gtc tct gtg ccc cga	656
Ser Phe Thr Ala Trp Val Cys Gln Val Gly Asp Val Ser Val Pro Arg	
150 155 160 165	
tcg ctg cga aga aag tgg gag cgg cag ccg cca act cgc caa gac gtc	704
Ser Leu Arg Arg Lys Trp Glu Arg Gln Pro Pro Thr Arg Gln Asp Val	
170 175 180	
gat cgc ctt ggc gtg gtc cgc gtg agc cca gat gga acc aca ttt ctg	752
Asp Arg Leu Gly Val Val Arg Val Ser Pro Asp Gly Thr Thr Phe Leu	
185 190 195	
gac gcg aac aac cgc ctt tac gac gag cga gga gag gaa ctg gtc gag	800
Asp Ala Asn Asn Arg Leu Tyr Asp Glu Arg Gly Glu Glu Leu Val Glu	
200 205 210	
gag gaa gac aaa gcc agg cgt cgg ctt ctt ttc gga gtc gac aac ccg	848
Glu Glu Asp Lys Ala Arg Arg Arg Leu Leu Phe Gly Val Asp Asn Pro	
215 220 225	
acg cca gga gaa aca gtg att gag acc agg tgc ccg tgc ccc tcc aca	896
Thr Pro Gly Glu Thr Val Ile Glu Thr Arg Cys Pro Cys Pro Ser Thr	
230 235 240 245	
gct gtt cgc atg gct gtg aaa atc aac cag acc cga tct ctg ggc gat	944
Ala Val Arg Met Ala Val Lys Ile Asn Gln Thr Arg Ser Leu Gly Asp	
250 255 260	
tcg att ggc gga tgc atc tcc ggt gca atc gtg cgg cca ccg ctg ggc	992
Ser Ile Gly Gly Cys Ile Ser Gly Ala Ile Val Arg Pro Pro Leu Gly	
265 270 275	
ctc ggc gag ccg tgt ttc gac aaa gtg gag gcg gag ctg gcg aag gcg	1040
Leu Gly Glu Pro Cys Phe Asp Lys Val Glu Ala Glu Leu Ala Lys Ala	
280 285 290	
atg atg tcg ctg cct gct acg aaa ggg ttt gag att ggc cag ggc ttt	1088
Met Met Ser Leu Pro Ala Thr Lys Gly Phe Glu Ile Gly Gln Gly Phe	
295 300 305	
gcg agt gtc acg ttg cga ggc agc gag cac aac gac cgc ttc att ccc	1136
Ala Ser Val Thr Leu Arg Gly Ser Glu His Asn Asp Arg Phe Ile Pro	
310 315 320 325	
ttc gag aga gcg tcg tgt tca ttc tcg gaa tca gcc gcg agc acg atc	1184
Phe Glu Arg Ala Ser Cys Ser Phe Ser Glu Ser Ala Ala Ser Thr Ile	
330 335 340	
aag cat gaa aga gat ggg tgt tca gct gct aca ctg tca cgg gag cga	1232
Lys His Glu Arg Asp Gly Cys Ser Ala Ala Thr Leu Ser Arg Glu Arg	
345 350 355	

gcg agt gac ggt aga aca act tct cga cat gaa gag gag gtg gaa agg 1280
Ala Ser Asp Gly Arg Thr Thr Ser Arg His Glu Glu Glu Val Glu Arg
360 365 370

ggg cgg gag cgc ata cag cgc gat acc ctc cat gtt act ggt gta gat 1328
Gly Arg Glu Arg Ile Gln Arg Asp Thr Leu His Val Thr Gly Val Asp
375 380 385

cag caa aac ggc aac tcc gaa gat tca gtt cga tac act tcc aaa tca 1376
Gln Gln Asn Gly Asn Ser Glu Asp Ser Val Arg Tyr Thr Ser Lys Ser
390 395 400 405

gag gcg tcc atc aca agg ctg tcg gga aat gct gcc tct gga ggt gct 1424
Glu Ala Ser Ile Thr Arg Leu Ser Gly Asn Ala Ala Ser Gly Gly Ala
410 415 420

cca gtc tgc cgc att cca cta ggc gag gga gta cgg atc agg tgt gga 1472
Pro Val Cys Arg Ile Pro Leu Gly Glu Gly Val Arg Ile Arg Cys Gly
425 430 435

agc aac aac gct ggt gga acg ctc gca ggc att aca tca gga gag aac 1520
Ser Asn Asn Ala Gly Gly Thr Leu Ala Gly Ile Thr Ser Gly Glu Asn
440 445 450

att ttt ttt cgg gtg gcc ttc aag cct gtt tct tcc atc ggc ttg gaa 1568
Ile Phe Phe Arg Val Ala Phe Lys Pro Val Ser Ser Ile Gly Leu Glu
455 460 465

caa gaa act gca gac ttt gct ggt gaa atg aac cag cta gct gtg aaa 1616
Gln Glu Thr Ala Asp Phe Ala Gly Glu Met Asn Gln Leu Ala Val Lys
470 475 480 485

ggc cgc cac gat ccc tgc gtc ctt ccg cga gcc cct cct ctg gtt gag 1664
Gly Arg His Asp Pro Cys Val Leu Pro Arg Ala Pro Pro Leu Val Glu
490 495 500

agc atg gct gcc ctt gtg att ggc gat ctg tgc ctc cgc cag cgc gcc 1712
Ser Met Ala Ala Leu Val Ile Gly Asp Leu Cys Leu Arg Gln Arg Ala
505 510 515

cgg gaa ggg ccg cac ccc ctt ctc gtc ctt cct caa cac agt ggt tgc 1760
Arg Glu Gly Pro His Pro Leu Leu Val Leu Pro Gln His Ser Gly Cys
520 525 530

cca tct tgc tgagctctac cttgttccaa aaacttgtgc atacggggta 1809
Pro Ser Cys
535

caccagggttc ctcacaagga gaatcgtgag gcggtgactg gccagcgcca cagattgctg 1869

ttcatgcaca agaaagaaaa cagcgcattt ccgccacaac ccagctgcat gaagttgctg 1929

gatatcgttc cggcgggtgct cggccttctt ctctacgctc gcgatgatac gtgcgcagct 1989

tcataagct ccttttgcatt tgtagtggtg tcccaacaga accctttgtg gaagggaatc 2049

tggtctcacg cttgcaggag agagttcgcc tttgttcacg aaataacgaa gccaaagcagc 2109

tcagttgcat tcagcctgca cacagttgca ttcagcctgc acactaaaca cgggcgaaat 2169
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<210> 46
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 <212> PRT
 <213> *Toxoplasma gondii*

<400> 46
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 20 25 30
 Pro Leu Ser Val Glu Asp Val Gln Pro Gln Leu Asn Arg Arg Arg Pro
 35 40 45
 Gly Gln Gly Pro Leu Ser Thr Gln Arg Arg Glu Lys Asp Arg Val Asn
 50 55 60
 Ile Leu Ser Gly Val Glu Asp Gly Tyr Thr Leu Gly Thr Pro Leu Ala
 65 70 75 80
 Met Leu Val Trp Asn Glu Asp Arg Arg Pro Gln Glu Tyr His Ala Leu
 85 90 95
 Ala Thr Val Pro Arg Pro Gly His Gly Asp Phe Thr Tyr His Ala Lys
 100 105 110
 Tyr His Ile His Ala Lys Ser Gly Gly Gly Arg Ser Ser Ala Arg Glu
 115 120 125
 Thr Leu Ala Arg Val Ala Ala Gly Ala Val Val Glu Lys Trp Leu Gly
 130 135 140
 Met His Tyr Gly Thr Ser Phe Thr Ala Trp Val Cys Gln Val Gly Asp
 145 150 155 160
 Val Ser Val Pro Arg Ser Leu Arg Arg Lys Trp Glu Arg Gln Pro Pro
 165 170 175
 Thr Arg Gln Asp Val Asp Arg Leu Gly Val Val Arg Val Ser Pro Asp
 180 185 190
 Gly Thr Thr Phe Leu Asp Ala Asn Asn Arg Leu Tyr Asp Glu Arg Gly
 195 200 205
 Glu Glu Leu Val Glu Glu Glu Asp Lys Ala Arg Arg Arg Leu Leu Phe
 210 215 220

Gly Val Asp Asn Pro Thr Pro Gly Glu Thr Val Ile Glu Thr Arg Cys
 225 230 235 240
 Pro Cys Pro Ser Thr Ala Val Arg Met Ala Val Lys Ile Asn Gln Thr
 245 250 255
 Arg Ser Leu Gly Asp Ser Ile Gly Gly Cys Ile Ser Gly Ala Ile Val
 260 265 270
 Arg Pro Pro Leu Gly Leu Gly Glu Pro Cys Phe Asp Lys Val Glu Ala
 275 280 285
 Glu Leu Ala Lys Ala Met Met Ser Leu Pro Ala Thr Lys Gly Phe Glu
 290 295 300
 Ile Gly Gln Gly Phe Ala Ser Val Thr Leu Arg Gly Ser Glu His Asn
 305 310 315 320
 Asp Arg Phe Ile Pro Phe Glu Arg Ala Ser Cys Ser Phe Ser Glu Ser
 325 330 335
 Ala Ala Ser Thr Ile Lys His Glu Arg Asp Gly Cys Ser Ala Ala Thr
 340 345 350
 Leu Ser Arg Glu Arg Ala Ser Asp Gly Arg Thr Thr Ser Arg His Glu
 355 360 365
 Glu Glu Val Glu Arg Gly Arg Glu Arg Ile Gln Arg Asp Thr Leu His
 370 375 380
 Val Thr Gly Val Asp Gln Gln Asn Gly Asn Ser Glu Asp Ser Val Arg
 385 390 395 400
 Tyr Thr Ser Lys Ser Glu Ala Ser Ile Thr Arg Leu Ser Gly Asn Ala
 405 410 415
 Ala Ser Gly Gly Ala Pro Val Cys Arg Ile Pro Leu Gly Glu Gly Val
 420 425 430
 Arg Ile Arg Cys Gly Ser Asn Asn Ala Gly Gly Thr Leu Ala Gly Ile
 435 440 445
 Thr Ser Gly Glu Asn Ile Phe Phe Arg Val Ala Phe Lys Pro Val Ser
 450 455 460
 Ser Ile Gly Leu Glu Gln Glu Thr Ala Asp Phe Ala Gly Glu Met Asn
 465 470 475 480
 Gln Leu Ala Val Lys Gly Arg His Asp Pro Cys Val Leu Pro Arg Ala
 485 490 495
 Pro Pro Leu Val Glu Ser Met Ala Ala Leu Val Ile Gly Asp Leu Cys
 500 505 510
 Leu Arg Gln Arg Ala Arg Glu Gly Pro His Pro Leu Leu Val Leu Pro
 515 520 525

Gln His Ser Gly Cys Pro Ser Cys
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<210> 47

<211> 362

<212> PRT

<213> Synechocystis sp.

<400> 47

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Ser His Gly Gly Gly Val Gly Val Ile Ile Asp Gly Cys Pro Pro Arg
20 25 30

Leu Glu Ile Ser Pro Glu Glu Ile Gln Val Asp Leu Asp Arg Arg Arg
35 40 45

Pro Gly Gln Ser Lys Ile Thr Thr Pro Arg Lys Glu Ala Asp Gln Cys
50 55 60

Glu Ile Leu Ser Gly Val Phe Glu Gly Lys Thr Leu Gly Thr Pro Ile
65 70 75 80

Ala Ile Leu Val Arg Asn Lys Asp Ala Arg Ser Gln Asp Tyr Asn Glu
85 90 95

Met Ala Val Lys Tyr Arg Pro Ser His Ala Asp Ala Thr Tyr Glu Ala
100 105 110

Lys Tyr Gly Ile Arg Asn Trp Gln Gly Gly Gly Arg Ser Ser Ala Arg
115 120 125

Glu Thr Ile Gly Arg Val Ala Ala Gly Ala Ile Ala Lys Lys Ile Leu
130 135 140

Ala Gln Phe Asn Gly Val Glu Ile Val Ala Tyr Val Lys Ser Ile Gln
145 150 155 160

Asp Ile Glu Ala Thr Val Asp Ser Asn Thr Val Thr Leu Glu Gln Val
165 170 175

Glu Ser Asn Ile Val Arg Cys Pro Asp Glu Glu Cys Ala Glu Lys Met
180 185 190

Ile Glu Arg Ile Asp Gln Val Leu Arg Gln Lys Asp Ser Ile Gly Gly
195 200 205

Val Val Glu Cys Ala Ile Arg Asn Ala Pro Lys Gly Leu Gly Glu Pro
210 215 220

Val Phe Asp Lys Leu Glu Ala Asp Leu Ala Lys Ala Met Met Ser Leu
225 230 235 240

Pro Ala Thr Lys Gly Phe Glu Phe Gly Ser Gly Phe Ala Gly Thr Leu
245 250 255

Leu Thr Gly Ser Gln His Asn Asp Glu Tyr Tyr Leu Asp Glu Ala Gly
 260 265 270
 Glu Trp Arg Thr Arg Thr Asn Arg Ser Gly Gly Val Gln Gly Gly Ile
 275 280 285
 Ser Asn Gly Glu Pro Ile Ile Met Arg Ile Ala Phe Lys Pro Thr Ala
 290 295 300
 Thr Ile Gly Gln Glu Gln Lys Thr Val Ser Asn Ile Gly Glu Glu Thr
 305 310 315 320
 Thr Leu Ala Ala Lys Gly Arg His Asp Pro Cys Val Leu Pro Arg Ala
 325 330 335
 Val Pro Met Val Glu Ala Met Ala Ala Leu Val Leu Cys Asp His Leu
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 Leu Arg Phe Gln Ala Gln Cys Lys Thr Leu
 355 360

<210> 48

<211> 431

<212> PRT

<213> Solanum lycopersicum

<400> 48

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 20 25 30
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 35 40 45
 Ala Gly Asn Thr Phe Gly Asn Tyr Phe Arg Val Thr Thr Phe Gly Glu
 50 55 60
 Ser His Gly Gly Gly Val Gly Cys Ile Ile Asp Gly Cys Pro Pro Arg
 65 70 75 80
 Leu Pro Leu Ser Glu Ser Asp Met Gln Val Glu Leu Asp Arg Arg Arg
 85 90 95
 Pro Gly Gln Ser Arg Ile Thr Thr Pro Arg Lys Glu Thr Asp Thr Cys
 100 105 110
 Lys Ile Ser Ser Gly Thr Ala Asp Gly Leu Thr Thr Gly Ser Pro Ile
 115 120 125
 Lys Val Glu Val Pro Asn Thr Asp Gln Arg Gly Asn Asp Tyr Ser Glu
 130 135 140
 Met Ser Leu Ala Tyr Arg Pro Ser His Ala Asp Ala Thr Tyr Asp Phe
 145 150 155 160

Lys Tyr Gly Val Arg Ser Val Gln Gly Gly Arg Ser Ser Ala Arg
 165 170 175
 Glu Thr Ile Gly Arg Val Ala Ala Gly Ala Val Ala Lys Lys Ile Leu
 180 185 190
 Lys Leu Tyr Ser Gly Thr Glu Ile Leu Ala Tyr Val Ser Gln Val His
 195 200 205
 Asn Val Val Leu Pro Glu Asp Leu Val Asp Asn Gln Ile Val Thr Leu
 210 215 220
 Glu Gln Ile Glu Ser Asn Ile Val Arg Cys Pro Asn Pro Glu Tyr Ala
 225 230 235 240
 Glu Lys Met Ile Gly Ala Ile Asp Tyr Val Arg Val Arg Gly Asp Ser
 245 250 255
 Val Gly Gly Val Val Thr Cys Ile Val Arg Asn Val Pro Arg Gly Leu
 260 265 270
 Gly Thr Pro Val Phe Asp Lys Leu Glu Ala Glu Leu Ala Lys Ala Cys
 275 280 285
 Met Ser Leu Pro Ala Thr Lys Gly Phe Glu Phe Gly Ser Gly Phe Ala
 290 295 300
 Gly Thr Phe Met Thr Gly Ser Glu His Asn Asp Glu Phe Phe Met Asp
 305 310 315 320
 Glu His Asp Gln Ile Arg Thr Lys Thr Asn Arg Ser Gly Gly Ile Gln
 325 330 335
 Gly Gly Ile Ser Asn Gly Glu Ile Ile Asn Met Arg Val Ala Phe Lys
 340 345 350
 Pro Thr Ser Thr Ile Ala Arg Lys Gln His Thr Val Ser Arg Asp Lys
 355 360 365
 His Glu Thr Glu Leu Ile Ala Arg Gly Arg His Asp Pro Cys Val Val
 370 375 380
 Pro Arg Ala Val Pro Met Val Glu Ala Met Val Ala Leu Val Leu Val
 385 390 395 400
 Asp Gln Leu Met Thr Gln Tyr Ala Gln Cys Met Leu Phe Pro Val Asn
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 Leu Thr Leu Gln Glu Pro Leu Gln Pro Ser Thr Thr Lys Ser Ala
 420 425 430

<210> 49

<211> 432

<212> PRT

<213> Neurospora crassa

<400> 49

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 His Cys Lys Ser Val Gly Cys Ile Val Asp Gly Val Pro Pro Gly Met
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 Glu Leu Thr Glu Asp Asp Ile Gln Pro Gln Met Thr Arg Arg Arg Pro
 35 40 45
 Gly Gln Ser Ala Ile Thr Thr Pro Arg Asp Glu Lys Asp Arg Val Ile
 50 55 60
 Ile Gln Ser Gly Thr Glu Phe Gly Val Thr Leu Gly Thr Pro Ile Gly
 65 70 75 80
 Met Leu Val Met Asn Glu Asp Gln Pro Pro Lys Asp Tyr Gly Asn Lys
 85 90 95
 Thr Met Asp Ile Tyr Pro Arg Pro Ser His Ala Asp Trp Thr Tyr Leu
 100 105 110
 Glu Lys Tyr Gly Val Lys Ala Ser Ser Gly Gly Gly Arg Ser Ser Ala
 115 120 125
 Arg Glu Thr Ile Gly Arg Val Ala Ala Gly Ala Ile Ala Glu Lys Tyr
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 Leu Lys Pro Arg Tyr Gly Val Glu Ile Val Ala Phe Val Ser Ser Val
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 Gly Ser Glu His Leu Phe Pro Pro Thr Ala Glu His Pro Ser Pro Ser
 165 170 175
 Thr Asn Pro Glu Phe Leu Lys Leu Val Asn Ser Ile Thr Arg Glu Thr
 180 185 190
 Val Asp Ser Phe Leu Pro Val Arg Cys Pro Asp Ala Glu Ala Asn Lys
 195 200 205
 Arg Met Glu Asp Leu Ile Thr Lys Phe Arg Asp Asn His Asp Ser Ile
 210 215 220
 Gly Gly Thr Val Thr Cys Val Ile Arg Asn Val Pro Ser Gly Leu Gly
 225 230 235 240
 Glu Pro Ala Phe Asp Lys Leu Glu Ala Met Leu Ala His Ala Met Leu
 245 250 255
 Ser Ile Pro Ala Thr Lys Gly Phe Glu Val Gly Ser Gly Phe Gly Gly
 260 265 270
 Cys Glu Val Pro Gly Ser Ile His Asn Asp Pro Phe Val Ser Ala Glu
 275 280 285
 Asn Thr Glu Ile Pro Pro Ser Val Ala Ala Ser Gly Ala Ala Arg Asn
 290 295 300

Gly Ile Pro Arg Pro Lys Leu Thr Thr Lys Thr Asn Phe Ser Gly Gly
 305 310 315 320

Ile Gln Gly Gly Ile Ser Asn Gly Ala Pro Ile Tyr Phe Arg Val Gly
 325 330 335

Phe Lys Pro Ala Ala Thr Ile Gly Gln Glu Gln Thr Thr Ala Thr Tyr
 340 345 350

Asp Gly Thr Ser Glu Gly Val Leu Ala Ala Lys Gly Arg His Asp Pro
 355 360 365

Ser Val Val Pro Arg Ala Val Pro Ile Val Glu Ala Met Ala Ala Leu
 370 375 380

Val Ile Met Asp Ala Val Leu Ala His Glu Ala Arg Val Thr Ala Lys
 385 390 395 400

Ser Leu Leu Pro Pro Leu Lys Gln Thr Ile Asn Ser Gly Lys Asp Thr
 405 410 415

Val Gly Asn Gly Val Ser Glu Asn Val Gln Glu Ser Asp Leu Ala Gln
 420 425 430

<210> 50

<211> 357

<212> PRT

<213> Haemophilus influenza

<400> 50

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Asn Leu Glu Leu Ser Glu Lys Asp Ile Gln Pro Asp Leu Asp Arg Arg
 35 40 45

Lys Pro Gly Thr Ser Arg Tyr Thr Thr Pro Arg Arg Glu Asp Asp Glu
 50 55 60

Val Gln Ile Leu Ser Gly Val Phe Glu Gly Lys Thr Thr Gly Thr Ser
 65 70 75 80

Ile Gly Met Ile Ile Lys Asn Gly Asp Gln Arg Ser Gln Asp Tyr Gly
 85 90 95

Asp Ile Lys Asp Arg Phe Arg Pro Gly His Ala Asp Phe Thr Tyr Gln
 100 105 110

Gln Lys Tyr Gly Ile Arg Asp Tyr Arg Gly Gly Gly Arg Ser Ser Ala
 115 120 125

Arg Glu Thr Ala Met Arg Val Ala Ala Gly Ala Ile Ala Lys Lys Tyr
 130 135 140

Leu Arg Glu His Phe Gly Ile Glu Val Arg Gly Phe Leu Ser Gln Ile
 145 150 155 160
 Gly Asn Ile Lys Ile Ala Pro Gln Lys Val Gly Gln Ile Asp Trp Glu
 165 170 175
 Lys Val Asn Ser Asn Pro Phe Phe Cys Pro Asp Glu Ser Ala Val Glu
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 Lys Phe Asp Glu Leu Ile Arg Glu Leu Lys Lys Glu Gly Asp Ser Ile
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 Gly Ala Lys Leu Thr Val Ile Ala Glu Asn Val Pro Val Gly Leu Gly
 210 215 220
 Glu Pro Val Phe Asp Arg Leu Asp Ala Asp Leu Ala His Ala Leu Met
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 Gly Ile Asn Ala Val Lys Gly Val Glu Ile Gly Asp Gly Phe Ala Val
 245 250 255
 Val Glu Gln Arg Gly Ser Glu His Arg Asp Glu Met Thr Pro Asn Gly
 260 265 270
 Phe Glu Ser Asn His Ala Gly Gly Ile Leu Gly Gly Ile Ser Ser Gly
 275 280 285
 Gln Pro Ile Ile Ala Thr Ile Ala Leu Lys Pro Thr Ser Ser Ile Thr
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 Ile Pro Gly Arg Ser Ile Asn Leu Asn Gly Glu Ala Val Glu Val Val
 305 310 315 320
 Thr Lys Gly Arg His Asp Pro Cys Val Gly Ile Arg Ala Val Pro Ile
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 Lys Ala Gln Cys Lys
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<210> 51
 <211> 376
 <212> PRT
 <213> *Saccharomyces cerevisiae*

<400> 51
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 35 40 45

Gly Gln Ser Lys Leu Ser Thr Pro Arg Asp Glu Lys Asp Arg Val Glu
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 Ile Gln Ser Gly Thr Glu Phe Gly Lys Thr Leu Gly Thr Pro Ile Ala
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 Met Met Ile Lys Asn Glu Asp Gln Arg Pro His Asp Tyr Ser Asp Met
 85 90 95
 Asp Lys Phe Pro Arg Pro Ser His Ala Asp Phe Thr Tyr Ser Glu Lys
 100 105 110
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 115 120 125
 Thr Ile Gly Arg Val Ala Ser Gly Ala Ile Ala Glu Lys Phe Leu Ala
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 Gln Asn Ser Asn Val Glu Ile Val Ala Phe Val Thr Gln Ile Gly Glu
 145 150 155 160
 Ile Lys Met Asn Arg Asp Ser Phe Asp Pro Glu Phe Gln His Leu Leu
 165 170 175
 Asn Thr Ile Thr Arg Glu Lys Val Asp Ser Met Gly Pro Ile Arg Cys
 180 185 190
 Pro Asp Ala Ser Val Ala Gly Leu Met Val Lys Glu Ile Glu Lys Tyr
 195 200 205
 Arg Gly Asn Lys Asp Ser Ile Gly Gly Val Val Thr Cys Val Val Arg
 210 215 220
 Asn Leu Pro Thr Gly Leu Gly Glu Pro Cys Phe Asp Lys Leu Glu Ala
 225 230 235 240
 Met Leu Ala His Ala Met Leu Ser Ile Pro Ala Ser Lys Gly Phe Glu
 245 250 255
 Ile Gly Ser Gly Phe Gln Gly Val Ser Val Pro Gly Ser Lys His Asn
 260 265 270
 Asp Pro Phe Tyr Phe Glu Lys Glu Thr Asn Arg Leu Arg Thr Lys Thr
 275 280 285
 Asn Asn Ser Gly Gly Val Gln Gly Gly Ile Ser Asn Gly Glu Asn Ile
 290 295 300
 Tyr Phe Ser Val Pro Phe Lys Ser Val Ala Thr Ile Ser Gln Glu Gln
 305 310 315 320
 Lys Thr Ala Thr Tyr Asp Gly Glu Glu Gly Ile Leu Ala Ala Lys Gly
 325 330 335
 Arg His Asp Pro Ala Val Thr Pro Arg Ala Ile Pro Ile Val Glu Ala
 340 345 350

Met Thr Ala Leu Val Leu Ala Asp Ala Leu Leu Ile Gln Lys Ala Arg
 355 360 365

Asp Phe Ser Arg Ser Val Val His
 370 375

<210> 52
 <211> 82
 <212> PRT
 <213> Zea mays

<400> 52
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 35 40 45
 Ser Ala Arg Ala Ala Pro Arg His Gln Gln Gln Ala Arg Arg Gly Gly
 50 55 60
 Arg Phe Pro Ser Leu Val Val Cys Ala Ser Ala Gly Met Asn Val Val
 65 70 75 80

Phe Val

<210> 53
 <211> 45
 <212> PRT
 <213> Toxoplasma gondii

<400> 53
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 35 40 45

<210> 54
 <211> 1837
 <212> DNA
 <213> Plasmodium falciparum

<220>
 <221> CDS
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 Arg Ser Ala Ile Lys Pro Val Ser Ser Ile Gln Ile Glu Lys Glu Thr
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 Asp Ser Cys Ile Leu Pro Arg Leu Pro Pro Ile Ile Glu Ala Ser Ser
 485 490 495 500
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<210> 55

<211> 527

<212> PRT

<213> Plasmodium falciparum

<400> 55

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 Asn Gln Ser Lys Leu Thr Ser Asn Arg Asn Glu Lys Asp Lys Leu Val
 50 55 60
 Ile Leu Ser Gly Phe Asp Glu Asn Lys Thr Leu Gly Thr Pro Ile Thr
 65 70 75 80
 Phe Leu Ile Tyr Asn Glu Asp Ile Lys Lys Glu Asp Tyr Asn Ser Phe
 85 90 95
 Ile Asn Ile Pro Arg Pro Gly His Gly Asp Tyr Thr Tyr Phe Met Lys
 100 105 110

Tyr His Val Lys Asn Lys Ser Gly Ser Ser Arg Phe Ser Gly Arg Glu
 115 120 125
 Thr Ala Thr Arg Val Ala Ala Gly Ala Cys Ile Glu Gln Trp Leu Tyr
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 Lys Ser Tyr Asn Cys Ser Ile Val Ser Tyr Val His Ser Val Gly Asn
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 Ile Lys Ile Pro Glu Gln Val Ser Lys Glu Leu Glu Asn Lys Asn Pro
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 Pro Ser Arg Asp Leu Val Asp Ser Tyr Gly Thr Val Arg Tyr Asn Glu
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 Lys Glu Lys Ile Phe Met Asp Cys Phe Asn Arg Ile Tyr Asp Met Asn
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 Ala Ser Met Leu Lys Thr Asp Glu Tyr Asn Lys Asn Thr Leu Thr Ile
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 Pro Ser Ile Asp Asn Thr Tyr Ile Asn Val Lys Thr Asn Glu Cys Asn
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 Thr Arg Cys Pro His Pro Tyr Thr Ala Val Gln Ile Cys Ser Tyr Ile
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 Glu Ser Asp Leu Leu Tyr Asp Asp Lys Gly Glu Cys Lys Asn Met Ser
 370 375 380
 Tyr His Ser Thr Ile Gln Asn Asn Glu Asp Gln Ile Leu Asn Ser Thr
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 Lys Gly Phe Met Pro Pro Lys Asn Asp Lys Asn Phe Asn Asn Ile Asp
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Asp Tyr Asn Val Thr Phe Asn Asn Asn Glu Glu Lys Leu Leu Ile Thr
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 Lys Thr Asn Asn Cys Gly Gly Ile Leu Ala Gly Ile Ser Thr Gly Asn
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 Glu Lys Glu Thr Ser Asp Phe Tyr Gly Asn Met Cys Asn Leu Lys Val
 465 470 475 480
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<210> 56

<211> 5883

<212> DNA

<213> *Toxoplasma gondii*

<400> 56

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cccgtagaat	gttcttgagg	gaatctgcgg	tgtggcctcc	ttcctcgaac	agtaggacaa	5220
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ttc
5883

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<210> 57

<211> 1499

<212> DNA

<213> *Toxoplasma gondii*

<400> 57

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ctttttctcg actggtctca ccaatacaaa agacaatgct cacagacgaa aagcagaagt 1440
tctgattgta tttatgaaac gtgaaaaaaa aaaaaaaaaa ctcgaggggg ggcccggta 1499

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<210> 58

<211> 495

<212> PRT

<213> *Toxoplasma gondii*

<400> 58

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Tyr Pro Pro Ser Ser Ile Arg Phe Phe Gly Phe Cys Ala Thr Asn Cys
1           5           10          15
Arg Leu Ser Arg Pro Pro Ser Val Val Asn Ser Phe Ala Glu Leu Pro
20          25          30

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Ala Ser His Leu Phe Ser Leu Pro Phe Trp Lys Val Ser Lys Gly Pro
 35 40 45
 Pro Ser Arg Ala Val Asp Arg Ser Ala Met Thr Ile Glu Phe Asp Val
 50 55 60
 Pro Lys Ser Phe Cys Phe Asp Phe Arg Lys Glu Cys Leu Glu Pro Leu
 65 70 75 80
 Ser Val Ser Thr Ser Phe Phe Val Ala Leu Pro Arg Arg Leu Pro Val
 85 90 95
 Leu Val Ser Ala Phe Arg Leu Thr Thr Ser Leu His Ser His Ser Met
 100 105 110
 Ala Ser Arg Ala Pro His Ala Gly Gln Arg Leu Arg Ser Leu Met Gln
 115 120 125
 Lys Lys Cys Val Met Leu Pro Gly Ala Tyr Asn Gly Leu Thr Ala Arg
 130 135 140
 Leu Ala Ala Glu Ala Gly Phe Glu Gly Val Tyr Val Ser Gly Ala Ala
 145 150 155 160
 Leu Ser Ala Cys Gln Gly Val Pro Asp Ile Gly Ile Leu Gly Leu Glu
 165 170 175
 Asp Phe Thr Arg Val Ile Ser Gln Ala Ala Ser Val Thr Ser Leu Pro
 180 185 190
 Val Leu Ala Asp Ala Asp Thr Gly Phe Gly Gly Pro Glu Met Val Arg
 195 200 205
 Arg Thr Val Phe Ala Tyr Asn Gln Ala Gly Ala Ala Gly Leu His Ile
 210 215 220
 Glu Asp Gln Arg Leu Pro Lys Lys Cys Gly His Leu Glu Gly Lys Gln
 225 230 235 240
 Leu Val Ser Ile Glu Glu Met Glu Glu Lys Ile Lys Ala Ala Ala Ala
 245 250 255
 Ala Ser Gln Asp Cys Ser Asn Gly Asp Phe Ile Ile Cys Ala Arg Thr
 260 265 270
 Asp Ala Arg Ser Val Asp Gly Leu Asp Ala Ala Val Glu Arg Ala Val
 275 280 285
 Arg Tyr Thr Ala Ala Gly Ala Asp Met Leu Phe Pro Glu Gly Leu Glu
 290 295 300
 Thr Glu Val Arg Gly Gly Lys Lys Asn Gln Arg Lys Lys Ala Ser Val
 305 310 315 320
 Leu Glu Arg Gln Arg Glu Ala Val Ala Leu Glu Glu Phe Gln Ala Phe
 325 330 335

Ala His Ala Leu Ala Val Leu Pro Gly Lys Ala Pro Phe Gly Gly Pro
 340 345 350
 Tyr Leu Leu Ala Asn Met Thr Glu Phe Gly Lys Thr Pro Ile Met Glu
 355 360 365
 Leu Ser Thr Phe Glu Gly Leu Gly Tyr His Cys Val Ile Tyr Pro Val
 370 375 380
 Ser Pro Leu Arg Val Ala Met Lys Ser Val Lys Gly Met Leu Val Asp
 385 390 395 400
 Leu Arg Lys Asn Gly Ser Val Gly His Ser Leu Glu Lys Met Tyr Thr
 405 410 415
 Arg Gln Glu Leu Tyr Ser Thr Leu His Tyr Arg Pro Glu Gly Thr Trp
 420 425 430
 Thr Tyr Pro Ser Ala Ser Val Cys Met Asp Lys Ala Val Glu Asp Thr
 435 440 445
 Glu Ala Gly Val Ser Gly Ser Ala Phe Ser Phe Ser Arg Leu Val Ser
 450 455 460
 Pro Ile Gln Lys Thr Met Leu Thr Asp Glu Lys Gln Lys Phe Leu Tyr
 465 470 475 480
 Leu Asn Val Lys Lys Lys Lys Lys Asn Ser Arg Gly Gly Pro Val
 485 490 495

<210> 59

<211> 264

<212> PRT

<213> Brassica napus

<400> 59

Met Ala Ala Ser Phe Ser Gly Pro Ser Met Ile Met Glu Glu Glu Gly
 1 5 10 15
 Arg Phe Glu Ala Glu Val Ala Glu Val Gln Ala Trp Trp Asn Ser Glu
 20 25 30
 Arg Phe Lys Leu Thr Arg Arg Pro Tyr Thr Ala Arg Asp Val Val Ala
 35 40 45
 Leu Arg Gly Asn Leu Lys Gln Ser Tyr Ala Ser Asn Glu Leu Ala Lys
 50 55 60
 Lys Leu Trp Arg Thr Leu Lys Thr His Gln Ala Asn Gly Thr Ala Ser
 65 70 75 80
 Arg Thr Phe Gly Ala Leu Asp Pro Val Gln Val Thr Met Met Ala Lys
 85 90 95
 His Leu Asp Ser Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser Thr His
 100 105 110

Thr Thr Thr Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp
115 120 125

Thr Val Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His
130 135 140

Asp Arg Lys Gln Arg Glu Ala Arg Met Ser Met Ser Arg Glu Glu Arg
145 150 155 160

Ala Arg Thr Pro Tyr Val Asp Tyr Leu Lys Pro Ile Ile Ala Asp Gly
165 170 175

Asp Thr Gly Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu
180 185 190

Phe Val Glu Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln Ser Ser
195 200 205

Val Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Ile
210 215 220

Ser Glu His Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val
225 230 235 240

Met Gly Val Glu Thr Leu Leu Val Ala Arg Thr Asp Ala Glu Ala Ala
245 250 255

Asn Leu Ile Gln Ser Asn Val Asp
260

<210> 60

<211> 261

<212> PRT

<213> Arabidopsis thaliana

<400> 60

Met Ile Asp Lys Pro Asn Gln Ile Met Glu Glu Glu Gly Arg Phe Glu
1 5 10 15

Ala Glu Val Ala Glu Val Gln Thr Trp Trp Ser Ser Glu Arg Phe Lys
20 25 30

Leu Thr Arg Arg Pro Tyr Thr Ala Arg Asp Val Val Ala Leu Arg Gly
35 40 45

His Leu Lys Gln Gly Tyr Ala Ser Asn Glu Met Ala Lys Lys Leu Trp
50 55 60

Arg Thr Leu Lys Ser His Gln Ala Asn Gly Thr Ala Ser Arg Thr Phe
65 70 75 80

Gly Ala Leu Asp Pro Val Gln Val Thr Met Met Ala Lys His Leu Asp
85 90 95

Thr Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser Thr His Thr Ser Thr
100 105 110

Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp Thr Val Pro
 115 120 125
 Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His Asp Arg Lys
 130 135 140
 Gln Arg Glu Ala Arg Met Ser Met Ser Arg Glu Glu Arg Thr Lys Thr
 145 150 155 160
 Pro Phe Val Asp Tyr Leu Lys Pro Ile Ile Ala Asp Gly Asp Thr Gly
 165 170 175
 Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu Phe Val Glu
 180 185 190
 Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln Ser Ser Val Thr Lys
 195 200 205
 Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Val Ser Glu His
 210 215 220
 Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val Met Gly Thr
 225 230 235 240
 Glu Thr Val Leu Val Ala Arg Thr Asp Ala Val Ala Ala Thr Leu Ile
 245 250 255
 Gln Ser Asn Ile Asp
 260

<210> 61
 <211> 264
 <212> PRT
 <213> Ricinus communis

<400> 61
 Met Ala Ala Ser Phe Ser Gly Pro Ser Met Ile Met Glu Glu Glu Gly
 1 5 10 15
 Arg Phe Glu Ala Glu Val Ala Glu Val Gln Ala Trp Trp Asn Ser Glu
 20 25 30
 Arg Phe Lys Leu Thr Arg Arg Pro Tyr Thr Ala Arg Asp Val Val Ala
 35 40 45
 Leu Arg Gly Asn Leu Lys Gln Ser Tyr Ala Ser Asn Glu Leu Ala Lys
 50 55 60
 Lys Leu Trp Arg Thr Leu Lys Thr His Gln Ala Asn Gly Thr Ala Ser
 65 70 75 80
 Arg Thr Phe Gly Ala Leu Asp Pro Val Gln Val Thr Met Met Ala Lys
 85 90 95
 His Leu Asp Ser Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser Thr His
 100 105 110

Thr Thr Thr Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp
 115 120 125
 Thr Val Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His
 130 135 140
 Asp Arg Lys Gln Arg Glu Ala Arg Met Ser Met Ser Arg Glu Glu Arg
 145 150 155 160
 Ala Arg Thr Pro Tyr Val Asp Tyr Leu Lys Pro Ile Ile Ala Asp Gly
 165 170 175
 Asp Thr Gly Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu
 180 185 190
 Phe Val Glu Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln Ser Ser
 195 200 205
 Val Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Ile
 210 215 220
 Ser Glu His Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val
 225 230 235 240
 Met Gly Val Glu Thr Leu Leu Val Ala Arg Thr Asp Ala Glu Ala Ala
 245 250 255
 Asn Leu Ile Gln Ser Asn Val Asp
 260

<210> 62
 <211> 264
 <212> PRT
 <213> Ricinus communis

<400> 62
 Met Ala Ala Ser Phe Ser Gly Pro Ser Met Ile Met Glu Glu Glu Gly
 1 5 10 15
 Arg Phe Glu Ala Glu Val Ala Glu Val Gln Ala Trp Trp Asn Ser Glu
 20 25 30
 Arg Phe Lys Leu Thr Arg Arg Pro Tyr Thr Ala Arg Asp Val Val Ala
 35 40 45
 Leu Arg Gly Asn Leu Lys Gln Ser Tyr Ala Ser Asn Glu Leu Ala Lys
 50 55 60
 Lys Leu Trp Arg Thr Leu Lys Thr His Gln Ala Asn Gly Thr Ala Ser
 65 70 75 80
 Arg Thr Phe Gly Ala Leu Asp Pro Val Gln Val Thr Met Met Ala Lys
 85 90 95
 His Leu Asp Ser Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser Thr His
 100 105 110

Thr Thr Thr Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp
 115 120 125
 Thr Val Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His
 130 135 140
 Asp Arg Lys Gln Arg Glu Ala Arg Met Ser Met Ser Arg Glu Glu Arg
 145 150 155 160
 Ala Arg Thr Pro Tyr Val Asp Tyr Leu Lys Pro Ile Ile Ala Asp Gly
 165 170 175
 Asp Thr Gly Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu
 180 185 190
 Phe Val Glu Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln Ser Ser
 195 200 205
 Val Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Ile
 210 215 220
 Ser Glu His Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val
 225 230 235 240
 Met Gly Val Glu Thr Leu Leu Val Ala Arg Thr Asp Ala Glu Ala Ala
 245 250 255
 Asn Leu Ile Gln Ser Asn Val Asp
 260

<210> 63
 <211> 246
 <212> PRT
 <213> Glycine max

<400> 63
 Glu Ala Glu Val Ala Glu Val Gln Ala Trp Trp Asn Ser Glu Arg Phe
 1 5 10 15
 Arg Leu Thr Lys Arg Pro Tyr Thr Ala Arg Asp Val Val Ser Leu Arg
 20 25 30
 Gly Asn Leu Arg Gln Thr Tyr Ala Ser Asn Glu Met Ala Lys Lys Leu
 35 40 45
 Trp Cys Leu Leu Lys Asn His Gln Ala Asn Gly Thr Ala Ser Arg Thr
 50 55 60
 Phe Gly Ala Leu Asp Pro Val Gln Val Thr Gln Met Ala Lys His Leu
 65 70 75 80
 Asp Thr Ile Tyr Val Ser Gly Trp Gln Cys Ser Ala Thr His Thr Thr
 85 90 95
 Ser Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp Thr Val
 100 105 110

Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His Asp Arg
 115 120 125

Lys Gln Arg Glu Glu Arg Met Arg Met Ser Arg Glu Glu Arg Ala Arg
 130 135 140

Thr Pro Tyr Val Asp Tyr Leu Arg Pro Ile Ile Ala Asp Gly Asp Thr
 145 150 155 160

Gly Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu Phe Val
 165 170 175

Glu Arg Gly Ala Ala Gly Ile His Ile Glu Asp Gln Ser Ser Val Thr
 180 185 190

Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Ile Ser Glu
 195 200 205

His Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val Met Gly
 210 215 220

Val Glu Thr Val Leu Val Ala Arg Thr Asp Ala Glu Ala Ala Asn Leu
 225 230 235 240

Ile Gln Ser Asn Ile Asp
 245

<210> 64

<211> 264

<212> PRT

<213> Cucurbita sp.

<400> 64

Met Ala Thr Ser Phe Ser Val Pro Ser Met Ile Met Glu Glu Glu Gly
 1 5 10 15

Arg Phe Glu Ala Glu Val Ala Glu Val Gln Ala Trp Trp Asn Ser Glu
 20 25 30

Arg Phe Lys Leu Thr Arg Arg Pro Tyr Thr Ala Lys Asp Val Val Ser
 35 40 45

Leu Arg Gly Ser Leu Arg Gln Ser Tyr Ala Ser Asn Asp Leu Ala Lys
 50 55 60

Lys Leu Trp Arg Thr Leu Lys Thr His Gln Ala Asn Ser Thr Ala Ser
 65 70 75 80

Arg Thr Phe Gly Ala Leu Asp Pro Val Gln Val Thr Met Met Ala Lys
 85 90 95

His Leu Asp Ser Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser Thr His
 100 105 110

Thr Ser Thr Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp
 115 120 125

Thr Val Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His
 130 135 140
 Asp Arg Lys Gln Arg Glu Ala Arg Met Ser Met Ser Arg Glu Glu Arg
 145 150 155 160
 Ala Lys Thr Pro Tyr Val Asp Tyr Leu Lys Pro Ile Ile Ala Asp Gly
 165 170 175
 Asp Thr Gly Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu
 180 185 190
 Phe Val Glu Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln Ser Ser
 195 200 205
 Val Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Val
 210 215 220
 Ser Glu His Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val
 225 230 235 240
 Met Gly Val Glu Thr Val Leu Val Ala Arg Thr Asp Ala Val Ala Ala
 245 250 255
 Thr Leu Ile Gln Thr Asn Val Asp
 260

<210> 65
 <211> 266
 <212> PRT
 <213> Pinus taeda

<400> 65
 Met Ala Ile Tyr Ser Ala Gln Ala Pro Asn Ser Ile Leu Glu Glu Glu
 1 5 10 15
 Ala Arg Phe Glu Ala Glu Val Ser Glu Thr Gln Ala Trp Trp Asn Ser
 20 25 30
 Thr Asp Leu Phe Arg Leu Thr Arg Arg Pro Tyr Thr Ala Arg Asp Val
 35 40 45
 Val Arg Leu Arg Gly Ser Met Arg Gln Ser Tyr Ala Ser Asn Glu Met
 50 55 60
 Ala Lys Lys Leu Trp Arg Thr Leu Lys Thr His Gln Ala Asn Lys Thr
 65 70 75 80
 Ala Ser Arg Thr Phe Gly Ala Leu Asp Pro Val Gln Val Ser Met Met
 85 90 95
 Ala Lys Tyr Leu Asp Ser Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser
 100 105 110
 Thr His Thr Thr Thr Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro
 115 120 125

Tyr Asp Thr Val Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln
 130 135 140

Phe His Asp Arg Lys Gln Lys Glu Ala Arg Met Ser Met Thr Arg Glu
 145 150 155 160

Glu Arg Ser Lys Thr Pro Tyr Ile Asp Tyr Leu Lys Pro Ile Ile Ala
 165 170 175

Asp Gly Asp Thr Gly Phe Gly Gly Ala Thr Ala Thr Val Lys Leu Cys
 180 185 190

Lys Leu Phe Val Glu Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln
 195 200 205

Ala Ser Val Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val
 210 215 220

Ser Val Gly Glu His Val Asn Arg Met Val Ala Ala Arg Leu Gln Phe
 225 230 235 240

Asp Ile Met Gly Val Glu Thr Leu Leu Val Ala Arg Thr Asp Ala Val
 245 250 255

Ala Ala Thr Leu Ile Gln Thr Asn Val Asp
 260 265

<210> 66

<211> 266

<212> PRT

<213> Neurospora crassa

<400> 66

Met Ala Ala Asn Asn Met Val Asn Pro Ala Val Asp Pro Ala Leu Glu
 1 5 10 15

Asp Glu Leu Phe Ala Lys Glu Val Glu Glu Val Lys Lys Trp Trp Ser
 20 25 30

Asp Ser Arg Trp Arg Gln Thr Lys Arg Pro Phe Thr Ala Glu Gln Ile
 35 40 45

Val Ser Lys Arg Gly Asn Leu Lys Ile Glu Tyr Ala Ser Asn Ala Gln
 50 55 60

Ala Lys Lys Leu Trp Lys Ile Leu Glu Asp Arg Phe Ala Lys Arg Asp
 65 70 75 80

Ala Ser Tyr Thr Tyr Gly Cys Leu Glu Pro Thr Met Val Thr Gln Met
 85 90 95

Ala Lys Tyr Leu Asp Thr Val Tyr Val Ser Gly Trp Gln Ser Ser Ser
 100 105 110

Thr Ala Ser Ser Ser Asp Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro
 115 120 125

Tyr Thr Thr Cys Pro Asn Lys Val Gly His Leu Phe Met Ala Gln Leu
130 135 140

Phe His Asp Arg Lys Gln Arg Gln Glu Arg Leu Ser Val Pro Lys Asp
145 150 155 160

Gln Arg Glu Lys Leu Ala Asn Ile Asp Tyr Leu Arg Pro Ile Val Ala
165 170 175

Asp Ala Asp Thr Gly His Gly Gly Leu Thr Ala Val Met Lys Leu Thr
180 185 190

Lys Leu Phe Ile Glu Lys Gly Ala Ala Gly Ile His Ile Glu Asp Gln
195 200 205

Ala Pro Gly Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val
210 215 220

Pro Ile Gln Glu His Ile Asn Arg Leu Val Ala Ile Arg Ala Gln Ala
225 230 235 240

Asp Ile Met Gly Ser Asp Leu Leu Cys Ile Ala Arg Thr Asp Ala Glu
245 250 255

Ala Ala Thr Leu Ile Thr Thr Thr Ile Asp
260 265

<210> 67

<211> 254

<212> PRT

<213> Coprinus cinereus

<400> 67

Met Ser Ser Glu Arg Ala Gln Phe Ala Ser Glu Val Ala Glu Val Glu
1 5 10 15

Arg Trp Trp Lys Ser Pro Arg Phe Ala Arg Val Asn Arg Pro Tyr Thr
20 25 30

Ala Ala Asp Val Val Ser Lys Arg Gly Thr Ile Lys Ile Asn Tyr Pro
35 40 45

Ser Asp Val Gln Gly Lys Lys Leu Trp Lys Leu Leu Ser Glu His Ala
50 55 60

Lys Asn Gly Thr Pro Ser His Thr Tyr Gly Ala Leu Asp Pro Val Gln
65 70 75 80

Val Thr Lys Met Ala Lys Tyr Leu Glu Thr Val Tyr Val Ser Gly Trp
85 90 95

Gln Ser Ser Ser Thr Ala Ser Ser Ser Asn Glu Pro Gly Pro Asp Leu
100 105 110

Ala Asp Tyr Pro Ser Asn Thr Val Pro Asn Lys Val Glu His Leu Phe
115 120 125

Met Ala Gln Leu Phe His Asp Arg Lys Gln Arg Glu Ala Arg Ser Arg
 130 135 140

Met Ser Asp Ala Glu Leu Ala Asn Thr Pro Val Ile Asp Tyr Leu Arg
 145 150 155 160

Pro Ile Val Ala Asp Ala Asp Thr Gly His Gly Gly Leu Thr Ala Val
 165 170 175

Met Lys Leu Thr Lys Met Phe Val Glu Lys Gly Ala Ala Gly Ile His
 180 185 190

Ile Glu Asp Gln Ala Pro Gly Thr Lys Lys Cys Gly His Met Ala Gly
 195 200 205

Lys Val Leu Val Pro Ile Gln Glu His Ile Asn Arg Leu Val Ala Ile
 210 215 220

Arg Leu Gln Tyr Asp Ile Met Gly Val Glu Asn Leu Val Val Ala Arg
 225 230 235 240

Thr Asp Ser Glu Ala Ala Thr Leu Ile Thr Ser Asn Ile Asp
 245 250

<210> 68

<211> 246

<212> PRT

<213> Escherichia coli

<400> 68

Met Lys Thr Arg Thr Gln Gln Ile Glu Glu Leu Gln Lys Glu Trp Thr
 1 5 10 15

Gln Pro Arg Trp Glu Gly Ile Thr Arg Pro Tyr Ser Ala Glu Asp Val
 20 25 30

Val Lys Leu Arg Gly Ser Val Asn Pro Glu Cys Thr Leu Ala Gln Leu
 35 40 45

Gly Ala Ala Lys Met Trp Arg Leu Leu His Gly Glu Ser Lys Lys Gly
 50 55 60

Tyr Ile Asn Ser Leu Gly Ala Leu Thr Gly Gly Gln Ala Leu Gln Gln
 65 70 75 80

Ala Lys Ala Gly Ile Glu Ala Val Tyr Leu Ser Gly Trp Gln Val Ala
 85 90 95

Ala Asp Ala Asn Leu Ala Ala Ser Met Tyr Pro Asp Gln Ser Leu Tyr
 100 105 110

Pro Ala Asn Ser Val Pro Ala Val Val Glu Arg Ile Asn Asn Thr Phe
 115 120 125

Arg Arg Ala Asp Gln Ile Gln Trp Ser Ala Gly Ile Glu Pro Gly Asp
 130 135 140

Pro Arg Tyr Val Asp Tyr Phe Leu Pro Ile Val Ala Asp Ala Glu Ala
 145 150 155 160
 Gly Phe Gly Gly Val Leu Asn Ala Phe Glu Leu Met Lys Ala Met Ile
 165 170 175
 Glu Ala Gly Ala Ala Ala Val His Phe Glu Asp Gln Leu Ala Ser Val
 180 185 190
 Lys Lys Cys Gly His Met Gly Gly Lys Val Leu Val Pro Thr Gln Glu
 195 200 205
 Ala Ile Gln Lys Leu Val Ala Ala Arg Leu Ala Ala Asp Val Thr Gly
 210 215 220
 Val Pro Thr Leu Leu Val Ala Arg Thr Asp Ala Asp Ala Ala Asp Leu
 225 230 235 240
 Ile Thr Ser Asp Cys Asp
 245

<210> 69
 <211> 228
 <212> PRT
 <213> *Toxoplasma gondii*

<400> 69
 Met Thr Ile Glu Phe Asp Val Pro Lys Ser Phe Cys Phe Asp Phe Arg
 1 5 10 15
 Lys Glu Cys Leu Glu Pro Leu Ser Val Ser Thr Ser Phe Phe Val Ala
 20 25 30
 Leu Pro Arg Arg Leu Pro Val Leu Val Ser Ala Phe Arg Leu Thr Thr
 35 40 45
 Ser Leu His Ser His Ser Met Ala Ser Arg Ala Pro His Ala Gly Gln
 50 55 60
 Arg Leu Arg Ser Leu Met Gln Lys Lys Cys Val Met Leu Pro Gly Ala
 65 70 75 80
 Tyr Asn Gly Leu Thr Ala Arg Leu Ala Ala Glu Ala Gly Phe Glu Gly
 85 90 95
 Val Tyr Val Ser Gly Ala Ala Leu Ser Ala Cys Gln Gly Val Pro Asp
 100 105 110
 Ile Gly Ile Leu Gly Leu Glu Asp Phe Thr Arg Val Ile Ser Gln Ala
 115 120 125
 Ala Ser Val Thr Ser Leu Pro Val Leu Ala Asp Ala Asp Thr Gly Phe
 130 135 140
 Gly Gly Pro Glu Met Val Arg Arg Thr Val Phe Ala Tyr Asn Gln Ala
 145 150 155 160

Gly Ala Ala Gly Leu His Ile Glu Asp Gln Arg Leu Pro Lys Lys Cys
 165 170 175
 Gly His Leu Glu Gly Lys Gln Leu Val Ser Ile Glu Glu Met Glu Glu
 180 185 190
 Lys Ile Lys Ala Ala Ala Ala Ser Gln Asp Cys Ser Asn Gly Asp
 195 200 205
 Phe Ile Ile Cys Ala Arg Thr Asp Ala Arg Ser Val Asp Gly Leu Asp
 210 215 220
 Ala Ala Val Glu
 225

<210> 70
 <211> 100
 <212> PRT
 <213> *Saccharomyces cerevisiae*

<400> 70
 Tyr Leu Thr Pro Ile Val Ala Asp Ala Asp Ala Gly His Gly Gly Leu
 1 5 10 15
 Thr Ala Val Phe Lys Leu Thr Lys Met Phe Ile Glu Arg Gly Ala Ala
 20 25 30
 Gly Ile His Met Glu Asp Gln Thr Ser Thr Asn Lys Lys Cys Gly His
 35 40 45
 Met Ala Gly Arg Cys Val Ile Pro Val Gln Glu His Val Asn Arg Leu
 50 55 60
 Val Thr Ile Arg Met Cys Ala Asp Ile Met His Ser Asp Leu Ile Val
 65 70 75 80
 Val Ala Arg Thr Asp Ser Glu Ala Ala Thr Leu Ile Ser Ser Thr Ile
 85 90 95
 Asp Thr Arg Asp
 100

<210> 71
 <211> 100
 <212> PRT
 <213> *Saccharomyces cerevisiae*

<400> 71
 Phe Leu Arg Pro Ile Ile Ala Asp Ala Asp Thr Gly His Gly Gly Ile
 1 5 10 15
 Thr Ala Ile Ile Lys Leu Thr Lys Leu Phe Ile Glu Arg Gly Ala Ala
 20 25 30
 Gly Ile His Ile Glu Asp Gln Ala Pro Gly Thr Lys Lys Cys Gly His
 35 40 45

Met Ala Gly Lys Val Leu Val Pro Val Gln Glu His Ile Asn Arg Leu
 50 55 60
 Val Ala Ile Arg Ala Ser Ala Asp Ile Phe Gly Ser Asn Leu Leu Ala
 65 70 75 80
 Val Ala Arg Thr Asp Ser Glu Ala Ala Thr Leu Ile Thr Ser Thr Ile
 85 90 95
 Asp His Arg Asp
 100

<210> 72
 <211> 100
 <212> PRT
 <213> *Saccharomyces cerevisiae*

<400> 72
 Tyr Leu Lys Pro Ile Ile Ala Asp Ala Asp Met Gly His Gly Gly Pro
 1 5 10 15
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<210> 76

<211> 506

<212> PRT

<213> *Toxoplasma gondii*

<400> 76

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Tyr Glu Cys Asp Ala Val Trp Pro Gly Trp Gly His Ala Ser Glu Asn
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 Gln Lys Ile Ile Glu Glu Gly Pro Val Val Ala Ala Pro Pro Glu Val
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 Tyr Phe Ser Ile Gly Ser Lys Gly Asn Ile His Ala Phe Asn Asp Ala
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 Gln Phe Gly His Leu Phe Ala His Gly Lys Asp Arg Arg Glu Ala Val
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Val Ala Asn Glu Thr His Thr Thr Trp Leu
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<210> 77

<211> 6965

<212> DNA

<213> *Toxoplasma gondii*

<400> 77

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<210> 78

<211> 131

<212> PRT

<213> *Cryptosporidium parvum*

<400> 78

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      35             40             45
Gln Val Leu Gly Asp Lys Tyr Gly Asp Val Phe Ala Leu Ser Thr Arg
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Asp Cys Thr Ile Gln Arg Arg His Gln Lys Val Ile Glu Glu Gly Pro
      65             70             75             80
Val Thr Ile Val Ser Gln Glu Ile Val Lys Glu Leu Glu Leu Ser Ala
      85             90             95
Glu Arg Met Cys Lys Ala Val Gly Tyr Ser Ser Ala Gly Thr Val Glu
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Phe Leu Tyr Asp Ile Glu Arg Ser Cys Ile Ala Phe Leu Glu Val Asn
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<210> 79

<211> 393

<212> DNA

<213> *Cryptosporidium parvum*

<400> 79

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<212> PRT

<213> Plasmodium falciparum

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 35 40 45

Gln Val Val Gly Asp Met Tyr Gly Asn Val Cys Ser Leu Ser Gly Arg
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Asp Cys Thr Thr Gln Arg Arg Phe Gln Lys Ile Phe Glu Glu Gly Pro
 65 70 75 80

Pro Ser Val Val Pro Tyr Pro Ile Phe Arg Glu Met Glu Lys Ser Ser
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Ile Arg Leu Thr Lys Met Ile Lys Tyr Arg Gly Ala Gly Thr Ile Glu
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Pro Arg Leu
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<212> DNA

<213> Plasmodium falciparum

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<210> 82

<211> 131

<212> PRT

<213> Plasmodium knowlesi

<400> 82

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Glu Ile Lys Lys Ala Tyr Thr Gln Val Gln Met Glu Leu Pro Asn Ser
 20 25 30

Pro Ile Phe Leu Met Lys Val Cys Ser Asn Val Arg His Ile Glu Ile
 35 40 45

Gln Val Val Gly Asp Met Tyr Gly Asn Val Cys Ser Leu Ser Gly Arg
 50 55 60

Asp Cys Thr Thr Gln Arg Arg Phe Gln Lys Ile Phe Glu Glu Gly Pro
 65 70 75 80

Pro Ser Val Val Pro Pro Asn Ile Phe Arg Glu Met Glu Lys Ala Ser
 85 90 95

Ile Arg Leu Thr Lys Met Ile Lys Tyr Arg Gly Ala Gly Thr Ile Glu
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Pro Arg Leu
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<210> 83

<211> 393

<212> DNA

<213> Plasmodium knowlesi

<400> 83

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